REMARKS

Applicants note the allowance of claims 1-3, 5-12, 20, 21, and 26-33 in the Office Action. Claims 4 and 22-25 have been canceled. Only claims 13-19 and 34 stand rejected. Claims 13 and 34 have been amended in an earnest attempt to place all remaining claims in condition for allowance. Basis for the amendments is found in the specification at page 13, paragraph [0045] and at page 24, paragraph [0071]. No new matter has been entered, and no new issues have been raised.

In the Office Action, the Examiner rejected claims 13-19 under 35 USC §103 as unpatentable over Wong in view of Doris. Claim 34 was rejected under 35 USC §103 as unpatentable over Wong taken with Doris and Han. Wong teaches the operation of an atomic force microscope with carbon nanotubes covalently bonded to the probe tip of the microscope. Doris was cited as teaching operation of an atomic force microscope in tapping mode using a laser beam and photodetector. With respect to claims 13-19, the Examiner concluded that it would have been obvious to one skilled in the art to use the microscope of Doris operated in tapping mode in the method of Wong to obtain topography and recognition information from a sample surface. With respect to claim 34, the Examiner concluded that it would have been obvious to use the microscope of Doris operated in tapping mode in the method of Wong, using magnetic excitation to oscillate the probe as taught by Han.

However, while Wong does obtain topography and recognition data, Wong's method is fundamentally different from that described by applicants. Because of the different methods of operation, there are both structural and operational differences in the claimed microscope versus that taught by Wong. Wong uses funtionalized carbon nanotubes (see Fig. 1a) on the probe tip. This results in a relatively stiff probe tip end. Indeed, Wong states (page 52) that, "In these and all other experiments described below, the applied loads were kept below the force required for nanotube buckling to ensure that only the nanotube end contacted the surface." Further, in Wong's method, recognition information results from changes in phase associated with the damping of cantilever oscillation between areas on the sample surface. See, Fig. 2c at page 53.

Applicants utilize a microscope in which a sensing agent has been secured to the cantilever tip using a flexible tether. As described in the specification and depicted in the

drawings, using such a flexible tether in conjunction with oscillation of the probe with a low mechanical Q factor results in an ability to discriminate between interactions between the probe and a sensed agent on the sample surface and the topography of the sample surface. That is, recognition of interactions with a sensed agent on the sample surface appear as relative drops in the peak displacement of the signal, substantially independent of the surface topography of the sample. Wong's method and apparatus are not capable of such discrimination and make no use of either flexible tethers or the measurement of peak probe displacement on the upward swing of the cantilever.

Claims 13 and 34 have been amended to more clearly recite these structural differences. The claimed microscope includes a scanning probe having a tip that has been sensitized with a sensing agent to a property of the surface. The sensing agent is bound to the tip by a flexible tether and is adapted to oscillate with a low mechanical Q factor. There are means for measuring and recording changes in peak displacement of the probe tip as a function of time. Wong does not teach or suggest the use of a flexible tether. Nor does Wong teach or suggest a microscope that includes means for measuring and recording the peak displacement value of the probe tip as a function of time. Rather, Wong uses a functionalized carbon nanotube secured to the probe tip and obtains recognition data by measuring phase change differences in signals between areas on the sample. Applicants submit that claims 13-19 and 34, as amended, recite subject matter not taught or suggested by the prior art.

For all of the above reasons, applicants submit that claims 13-19 and 34, as amended are patentable. Claims 1-3, 5-12, 20, 21, and 26-33 stand allowed. Early notification of the allowance of all claims is respectfully solicited.

Respectfully submitted,

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